CURRICULUM VITAE

Kelly G. Ten Hagen

Education:

1982-1986	BS with Distinction and Honors (magna cum laude), Biology with a concentration in Genetics and Development, Cornell University, Ithaca, NY
1986-1992	PhD, Genetics, Stanford University, Stanford, CA

Employment History:

1988-1989	Teaching Assistant, Human Genetics (for medical and graduate students), Stanford University
1991	Program Coordinator, Genetics Research Colloquia, Stanford University
1992-2001	Research Assistant Professor, Department of Biochemistry and Biophysics, University of Rochester
2001-2004	Senior Research Fellow, NIDDK, National Institutes of Health
2004-2012	Chief, Developmental Glycobiology Unit, LCDB/NIDCR, National Institutes of Health
2012-2015	Senior Investigator and Chief, Developmental Glycobiology Section, LCDB/NIDCR, National Institutes of Health
2015-present	Senior Investigator and Chief, Developmental Glycobiology Section, OPCB/NIDCR, National Institutes of Health
2015-present	Deputy Branch Chief, OPCB/NIDCR, National Institutes of Health

Editorial Responsibilities:

2007-2012	Editorial Board Member for The Journal of Biological Chemistry
2010	Guest Editor for Seminars in Cell and Developmental Biology
2011-present	Editorial Board Member for Glycobiology
2006-present	Reviewer for Archives of Biochemistry and Biophysics
	Reviewer for Cancer Cell
	Reviewer for Development
	Reviewer for Developmental Biology
	Reviewer for Developmental Cell
	Reviewer for Glycobiology
	Reviewer for The International Journal of Biochem. and Cell Biology

Reviewer for The Journal of Biological Chemistry

Reviewer for Nature

Reviewer for Nature Communications

Reviewer for PNAS

Reviewer for Science

Reviewer for Trends in Cell Biology

Membership and Activity in Professional Societies:

1992-present	American Association for the Advancement of Science
2006-present	American Society for Biochemistry and Molecular Biology
2007-present	Society for Glycobiology
2009-2012	Board of Directors for the Society for Glycobiology (Federal Liaison)
2010-2011	Society for Glycobiology Representative to the International Glycoconjugate Organization
2012-present	Society for Glycobiology Ambassador for Developmental Biology

Honors and Awards:

2007	NIDCR Award for Exceptional Performance
2010	NIDCR Award for Exceptional Performance
2012	NIDCR Performance Award
2014	NIDCR Performance Award

Extramural Activities:

2007	NSF Grant Reviewer
2008	Expert Witness for RFA Proposal (NHLBI)
2012	NSF Grant Reviewer
2013	NIH Commonfund Workshop Panel Member
2014-present	Program Committee for 2016 Gordon Research Conference on Protein Processing, Trafficking and Secretion

Invited Presentations:

2002	NIH Drosophila Scientific Interest Group, NIH, Bethesda, MD
2003	Laboratory of Molecular Genetics, NICHD, NIH, Bethesda, MD
2003	Hereditary Inclusion Body Myopathy Meeting, Bethesda, MD

2004	Laboratory of Cellular and Developmental Biology, NIDDK, NIH, Bethesda, MD
2005	Biotechnology in the 21st Century: A Symposium Honoring Stanley N. Cohen, Napa Valley, CA
2005	Glycobiology Gordon Research Conference, Ventura, CA
2006	Complex Carbohydrate Research Center, The University of Georgia, Athens, GA
2006	The Glycobiology Interest Group, Johns Hopkins University, Baltimore, MD
2006	Frontiers in Glycomics: Bioinformatics and Biomarkers in Disease (Session Chair), Bethesda, MD
2006	Glycosciences in Cancer Workshop, NCI, Frederick, MD
2007	Boston University, Boston, MA
2007	Glycobiology Gordon Research Conference, Ventura, CA
2007	The University of Kentucky, Louisville, KT
2007	EMBO Workshop on Glycoscience and Development, Lille, France
2008	NIH Glycosciences Research Day (Speaker and Session Chair), Bethesda, MD
2008	GlycoT 2008, Emory University, Atlanta, GA
2008	Rochester Oral Biology Research Conference (Speaker and Session Chair), Rochester, NY
2008	Annual Meeting of the Society for Glycobiology, Fort Worth, TX
2008	Glycobiology Gordon Research Conference, Ventura, CA (Session Chair)
2009	NIH Glycobiology Interest Group Seminar Series, Bethesda, MD
2009	NIH/FDA Glycosciences Research Day, Bethesda, MD (Speaker, Session Chair and Meeting Co-Chair)
2009	Children's National Medical Center, Washington, DC
2009	The 20th International Symposium on Glycoconjugates, San Juan, PR
2009	The 32nd Annual Meeting of the Molecular Biology Society of Japan, Yokohama, Japan
2010	35 Years of DNA Cloning: Individual and Global Health Priorities in the 21st Century, Napa Valley, CA
2010	University of Wyoming, Laramie, WY
2010	NIH/FDA Glycosciences Research Day, Bethesda, MD (Session Chair and Meeting Co-Chair)
2010	NIH Research Festival, Bethesda, MD

2011	Salivary Glands and Exocrine Biology Gordon Research Conference, Galveston, TX
2011	Glycobiology Gordon Research Conference, Barga, Italy
2011	Mucins in Health and Disease Workshop, Cambridge, UK
2011	The 21st International Symposium on Glycoconjugates, Vienna, Austria (Speaker and Session Co-Chair)
2012	8th International Symposium on Glycosyltransferases, Hannover, Germany
2012	Joint Meeting of the American Society for Matrix Biology and the Society for Glycobiology, San Diego, CA
2013	Mucins in Health and Disease Workshop, Cambridge, UK
2013	Annual Meeting of the Society for Glycobiology, St. Petersburg, FL
2014	NIH/FDA Glycosciences Research Day, Bethesda, MD (Meeting Co-Chair)
2014	Workshops in Molecular and Cellular Glycoscience: Exploring the Frontiers of Chemical Glycoscience, Bethesda, MD (Session Chair)
2014	NIH Director's Seminar Series, Bethesda, MD
2014	Protein Processing, Trafficking and Secretion Gordon Research Conference, New London, NH
2014	Baltimore-Washington Area Glycobiology Interest Group, Johns Hopkins University, Baltimore, MD
2014	Joint Meeting of the Society for Glycobiology and Japanese Society of Carbohydrate Research, Honolulu, HI (Session Chair)
2015	Setting the Scene for 2015: A Symposium Honoring Stanley N. Cohen, Aptos, CA (Speaker and Session Chair)
2015	NIDCR PI Seminar Series, Bethesda, MD
2015	Glycobiology Gordon Research Conference, Barga, Italy
2015	NIH/FDA Glycosciences Research Day, Bethesda, MD
2015	Mucins in Health and Disease Workshop, Cambridge, UK

Intramural Activities Outside the NIDCR DIR:

2001-present	NIH Drosophila Interest Group
2006-2012	NIH Tenure Track Investigators Committee
2008-present	Steering Committee for the NIH Glycobiology Scientific Interest Group
2009	Co-Chair for the 2009 NIH/FDA Glycosciences Research Day
2010	Co-Chair for the 2010 NIH/FDA Glycosciences Research Day
2012	Instructor for Special Topics in Glycosciences course

2013	Instructor for Special Topics in Glycosciences course
2013-present	NIH Women Scientist Advisors Committee
2014-present	NIH Women Scientist Advisors Executive Committee
2014	Co-Chair for the 2014 NIH/FDA Glycosciences Research Day
2014	Chair, NIH Inquiry Committee
2015	Co-Chair for Subcommittee for WSA survey design
2015-present	WSA Tenure-Track Investigator Group Mentor
2015-present	Steering Committee for the NIH Developmental Biology Scientific Interest Group

Activities Within the NIDCR DIR:

2006	Designed and conducted a "Mentoring Session" for the LCDB
2006-2007	LCDB Seminar Series organizer
2006-2013	Developmental Biology Journal Club organizer
2006-present	Secondary and tertiary mentor for postdoctoral fellows in LCDB
2011	Co-Chair of the 2011 NIDCR Principal Investigators' Retreat
2011-present	Clinical Research Fellows Selection Committee
2013-present	NIDCR Promotion and Tenure Committee
2014	NIDCR IRP Review Committee
2014-present	NIDCR Committee on Diversity and Inclusion
2014	Search Committee for Clinical Director, NIDCR
2014	Search Committee for Clinical Investigator, NIDCR
2014	Search Committee for Tenure Track Investigator, NIDCR
2015-present	Deputy Branch Chief, OPCB, NIDCR

Bibliography:

Peer-reviewed research articles:

1. **Ten Hagen KG**, Gilbert DM, Willard HF, Cohen SN. 1990. Replication timing of DNA sequences associated with human centromeres and telomeres. Mol Cell Biol. 10(12): 6348-6355.
2. Ravnan JB, Gilbert DM, **Ten Hagen KG**, Cohen SN. 1992. Random-choice replication of extrachromosomal bovine papillomavirus (BPV) molecules in heterogeneous, clonally derived BPV-infected cell lines. J Virol. 66(12): 6946-6952.
3. **Ten Hagen KG**, Cohen SN. 1993. Timing of replication of beta satellite repeats of human chromosomes. Nucleic Acids Res. 21(9): 2139-2142.

4. O'Connell BC, **Ten Hagen KG**, Lazowski KW, Tabak LA, Baum BJ. 1995. Facilitated DNA transfer to rat submandibular gland in vivo and GRP-Ca gene regulation. Am J Physiol. 268(6 Pt 1): G1074-1078.

5. **Ten Hagen KG**, Ravnan JB, Cohen SN. 1995. Disparate replication properties of integrated and extrachromosomal forms of bovine papilloma virus in ID13 cells. J Mol Biol. 254(2): 119-129.

6. Zara J, Hagen FK, **Ten Hagen KG**, Van Wuyckhuyse BC, Tabak LA. 1996. Cloning and expression of mouse UDP-GalNAc:polypeptide N-acetylgalactosaminyltransferase-T3. Biochem Biophys Res Comm. 228(1): 38-44.

7. Hagen FK, **Ten Hagen KG**, Beres TM, Balys MM, VanWuyckhuyse BC, Tabak LA. 1997. cDNA cloning and expression of a novel UDP-N-acetyl-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase. J Biol Chem. 272(21): 13843-13848.

8. Nehrke K, **Ten Hagen KG**, Hagen FK, Tabak LA. 1997. Charge distribution of flanking amino acids inhibits O-glycosylation of several single-site acceptors in vivo. Glycobiology. 7(8): 1053-1060.

9. **Ten Hagen KG**, Beres TM, Szpirer J, Szpirer C, Tabak LA. 1997. Chromosomal organization and expression analysis of two distinct genes encoding glutamine/glutamic acid-rich proteins. Biochem J. 324 (Pt 1): 177-184.

10. **Ten Hagen KG**, Hagen FK, Balys MM, Beres TM, Van Wuyckhuyse B, Tabak LA. 1998. Cloning and expression of a novel, tissue specifically expressed member of the UDP-GalNAc:polypeptide N-acetylgalactosaminyltransferase family. J Biol Chem. 273(42): 27749-27754.

11. **Ten Hagen KG**, Tetaert D, Hagen FK, Richet C, Beres TM, Gagnon J, Balys MM, VanWuyckhuyse B, Bedi GS, Degand P, Tabak LA. 1999. Characterization of a UDP-GalNAc:polypeptide N-acetylgalactosaminyltransferase that displays glycopeptide N-acetylgalactosaminyltransferase activity. J Biol Chem. 274(39): 27867-27874.

12. Kingsley PD, **Ten Hagen KG**, Maltby KM, Zara J, Tabak LA. 2000. Diverse spatial expression patterns of UDP-GalNAc:polypeptide N-acetylgalactosaminyl-transferase family member mRNAs during mouse development. Glycobiology. 10(12): 1317-1323.

13. **Ten Hagen KG,** Balys MM. 2000. Low levels of GRP-Ca expression in transgenic mice. J Dent Res. 79(4): 926-929.

14. Melvin JE, Nguyen HV, Nehrke K, Schreiner CM, **Ten Hagen KG**, Scott W. 2001. Targeted disruption of the Nhe1 gene fails to inhibit beta(1)-adrenergic receptor-induced parotid gland hypertrophy. Am J Physiol Gastrointest Liver Physiol. 280(4): G694-700.

15. **Ten Hagen KG**, Bedi GS, Tetaert D, Kingsley PD, Hagen FK, Balys MM, Beres TM, Degand P, Tabak LA. 2001. Cloning and characterization of a ninth member of the UDP-GalNAc:polypeptide N-acetylgalactosaminyltransferase family, ppGaNTase-T9. J Biol Chem. 276(20): 17395-17404.

16. Tetaert D, **Ten Hagen KG**, Richet C, Boersma A, Gagnon J, Degand P. 2001.

Glycopeptide N-acetylgalactosaminyltransferase specificities for O-glycosylated sites on MUC5AC mucin motif peptides. Biochem J. 357(Pt 1): 313-320.

17. **Ten Hagen KG**, Balys MM, Tabak LA, Melvin JE. 2002. Analysis of isoproterenol-induced changes in parotid gland gene expression. Physiol Genomics. 8(2): 107-114.

18. **Ten Hagen KG**, Tran DT. 2002. A UDP-GalNAc:polypeptide N-acetylgalactosaminyltransferase is essential for viability in Drosophila melanogaster. J Biol Chem. 277(25): 22616-22622.

19. **Ten Hagen KG**, Tran DT, Gerken TA, Stein DS, Zhang Z. 2003. Functional characterization and expression analysis of members of the UDP-GalNAc:polypeptide N-acetylgalactosaminyltransferase family from Drosophila melanogaster. J Biol Chem. 278(37): 35039-35048.

20. Young WW, Jr., Holcomb DR, **Ten Hagen KG**, Tabak LA. 2003. Expression of UDP-GalNAc:polypeptide N-acetylgalactosaminyltransferase isoforms in murine tissues determined by real-time PCR: a new view of a large family. Glycobiology. 13(7): 549-557.

21. Hang HC, Yu C, **Ten Hagen KG**, Tian E, Winans KA, Tabak LA, Bertozzi CR. 2004. Small molecule inhibitors of mucin-type O-linked glycosylation from a uridine-based library. Chem Biol. 11(3): 337-345.

22. Pratt MR, Hang HC, **Ten Hagen KG**, Rarick J, Gerken TA, Tabak LA, Bertozzi CR. 2004. Deconvoluting the functions of polypeptide N-alpha-acetylgalactosaminyltransferase family members by glycopeptide substrate profiling. Chem Biol. 11(7): 1009-1016.

23. Muller R, Hulsmeier AJ, Altmann F, **Ten Hagen K**, Tiemeyer M, Hennet T. 2005. Characterization of mucin-type core-1 beta1-3 galactosyltransferase homologous enzymes in Drosophila melanogaster. FEBS J. 272(17): 4295-4305.

24. Tian E, **Ten Hagen KG**. 2006. Expression of the UDP-GalNAc: polypeptide N-acetylgalactosaminyltransferase family is spatially and temporally regulated during Drosophila development. Glycobiology. 16(2): 83-95. *(Figures from this paper were chosen as the cover image for the 2007 issues of the journal Glycobiology).*

25. Tian E, **Ten Hagen KG**. 2007. O-linked glycan expression during Drosophila development. Glycobiology. 17(8): 820-827.

26. Tian E, **Ten Hagen KG**. 2007. A UDP-GalNAc:polypeptide N-acetylgalactosaminyltransferase is required for epithelial tube formation. J Biol Chem. 282(1): 606-614. *(This paper was a Featured Article in the December 2006 issue of Functional Glycomics Gateway by the Nature Publishing Group).*

27. Gerken TA, **Ten Hagen KG**, Jamison O. 2008. Conservation of peptide acceptor preferences between Drosophila and mammalian polypeptide-GalNAc transferase orthologue pairs. Glycobiology. 18 (11): 861-870.

28. Zhang L, Zhang Y, **Ten Hagen KG.** 2008. A mucin-type O-glycosyltransferase modulates cell adhesion during Drosophila development. J Biol Chem. 283(49): 34076-34086.

29. Sun Q, Tian E, Turner RJ, **Ten Hagen KG.** 2010. Developmental and functional

studies of the SLC12 gene family members from Drosophila melanogaster. Am J Physiol. 298: C26-C37.

30. Zhang L, Tran DT, **Ten Hagen KG**. 2010. An O-glycosyltransferase promotes cell adhesion during development by influencing secretion of an extracellular matrix integrin ligand. J Biol Chem. 285(25): 19491-19501. *(This paper was highlighted in the August 2010 issue of Functional Glycomics Gateway by the Nature Publishing Group).*
31. Zhang L, **Ten Hagen KG.** 2010. Dissecting the biological role of mucin-type O-glycosylation using RNA interference in Drosophila cell culture. J Biol Chem. 285 (45): 34477-34484.
32. Tran DT, Zhang L, Zhang Y, Tian E, Earl L, **Ten Hagen KG.** 2012. Multiple members of the UDP-GalNAc: polypeptide N-acetylgalactosaminyltransferase family are essential for viability in Drosophila. J Biol Chem. 287 (8): 5243-5252.
33. Kakani S, Yardeni T, Poling J, Ciccone C, Niethamer T, Klootwijk RD, Manoli I, Darvish D, Hoogstraten-Miller S, Zerfas P, Speranksy V, Tian E, **Ten Hagen KG**, Kopp JB, Gahl WA, Huizing M. 2012. The *Gne* M712T mouse as a model for human glomerulopathy. Am J Pathol. 180(4): 1-10.
34. Tian E, Hoffman MP, **Ten Hagen KG.** 2012. O-glycosylation modulates integrin and FGF signaling by influencing the secretion of basement membrane components. Nature Comm. 3:869 DOI: 10.1038/NCOMMS1874. (*Our image was selected as the Featured Image for this issue. This was also the featured article on the NIH Deputy Director for Intramural Research Web Board for June 2012.)*
35. Tran DT, Lim JM, Liu M, Stalnaker SH, Wells L, **Ten Hagen KG*,** Live D*. 2012. Glycosylation of α-dystroglycan: *O*-mannosylation influences the subsequent addition of GalNAc by the UDP-GalNAc polypeptide *N*-acetylgalactosaminyltransferases. J Biol Chem. 287 (25): 20967-20974. *(* co-contributing authors).*
36. Zhang L, Syed ZA, van Dijk Härd I, Lim J-M, Wells L, **Ten Hagen KG**. 2014. O-glycosylation regulates polarized secretion by modulating Tango1 stability. Proc. Nat'l. Acad. Sci. USA, 111(20): 7296-7301.
37. Tian E, Stevens SR, Guan Y, Anderson SA, Springer DA, Starost MF, Patel V, **Ten Hagen KG**, Tabak L. 2015. *Galnt1* is required for normal heart valve development and cardiac function. PLoS ONE 10(1): e0115861. doi:10.1371/journal.pone.0115861.
38. Tran DT, Masedunskas A, Weigert W, **Ten Hagen KG**. 2015. Arp2/3-mediated F-actin formation controls regulated exocytosis in vivo. Nature Comm. DOI: 10.1038/NCOMMS10098. (*This paper is featured in a* Nature Cell Biology News and Views *article*).
39. Revoredo L, Wang S, Bennett EP, Clausen H, Moremen KW, Jarvis DL, **Ten Hagen KG**, Tabak LA, Gerken TA 2016. Mucin-type O-glycosylation is controlled by short- and long-range glycopeptide substrate recognition that varies among members of the polypeptide GalNAc transferase family. Glycobiology 26(4): 360-376.

Peer-reviewed review articles:

1. **Ten Hagen KG**, Fritz TA, Tabak LA. 2003. All in the family: the UDP-

GalNAc:polypeptide N-acetylgalactosaminyltransferases. Glycobiology. 13(1): 1R-16R.

2. **Ten Hagen KG**, Zhang L, Tian E, Zhang Y. 2009. Glycobiology on the fly: developmental and mechanistic insights from Drosophila. Glycobiology. 19(2): 102-111.
3. Tian E, **Ten Hagen KG**. 2009. Recent insights into the biological roles of mucin-type O-glycosylation. Glycoconjugate J. 26(3): 325-334.
4. Tran DT, **Ten Hagen KG**. 2013. Mucin-type O-glycosylation during development. J Biol Chem. 288(10): 6921-6929. (*Our image was selected as the cover image for this issue).*

Invited articles:

1. Zhang L, **Ten Hagen KG**. 2011. The cellular microenvironment and cell adhesion: the role of O-glycosylation. Biochem. Soc. Trans. 39 (1): 378-382.
2. **Ten Hagen KG.** 2016. Novel or reproducible: that is the question. Glycobiology. *In press.*

Chapters and proceedings:

1. Hagen FK, **Ten Hagen KG**, Tabak LA. 2002. Polypeptide N-acetylgalactosaminyl-transferases. In: Handbook of Glycosyltransferases and Related Genes. Edited by N Taniguchi, K Honke, M Fukuda. Springer-Verlag. p. 167-173.
2. **Ten Hagen KG.** 2010. Developmental Glycobiology. Sem. Cell and Dev. Biol. 21: 599.
3. Tian E, Zhang, L, **Ten Hagen KG**. 2013. Fluorescent lectin staining of *Drosophila* embryos and tissues to detect the spatial distribution of glycans during development. Methods Mol. Biol. 1022: 99-105.
4. Zhang L, Tian E, **Ten Hagen KG**. 2014. UDP-*N*-acetyl-α-D-galactosamine:polypeptide *N*-acetylgalactosaminyltransferases. In: Handbook of Glycosyltransferases and Related Genes. Edited by N Taniguchi, K Honke, M Fukuda, H Narimatsu, Y Yamaguchi and T Angata. Springer-Verlag. p. 495-511.
5. Zhang L, **Ten Hagen KG**. 2015. Extracellular O-Glycans. In: Encyclopedia of Cell Biology, 1st Edition. Edited by RA Bradshaw, P Stahl. Elsevier Limited. ISBN: 978-0-123-94447-4.
6. **Ten Hagen KG**. 2015. Mucin-Type O-Glycosylation and Development. In: Glycoscience: Biology and Medicine. Edited by N Taniguchi, T Endo, GW Hart, PH Seeberger, C-H Wong. Springer-Verlag. ISBN: 978-4-431-54840-9.

Books and journals edited:

1. **Ten Hagen KG.** 2010. Developmental Glycobiology. Sem. Cell and Dev. Biol. 21: 599-662.

List of MTAs:

2004	Dr. Thierry Hennett, University of Zurich, Glycopeptides and recombinant transferase proteins
2005	Dr. Carolyn Bertozzi, University of California, Berkeley, Recombinant transferase proteins
2005	Dr. Thomas Gerken, Case Western Reserve University, Recombinant transferase proteins
2006	Dr. Boguslaw Wojczyk, Columbia University, Transferase expression vectors
2007	Dr. Pier Paolo D'Avino, University of Cambridge, Mutant fly stocks
2007	Dr. Deborah Andrew, Johns Hopkins University, Mutant fly stocks
2009	Dr. Rosana Blawid, Max Planck Institute, Mutant fly stocks
2011	Dr. Faith Liebl, Southern Illinois University, Mutant fly stocks
2011	Dr. Honorine Ward, Tufts University Medical Center, Transferase expression vectors
2012	Dr. Kendal Broadie, Vanderbilt University, Mutant fly stocks
2012	Dr. John Fessler, UCLA, Mutant fly stocks
2013	Dr. Honorine Ward, Tufts University Medical Center, Glycosyltransferases
2013	Dr. Juan Ianowski, University of Saskatchewan, Antibody to CG4357
2015	Dr. Vlad Panin, Texas A&M University, Mutant fly stocks
2015	Dr. Matthew Pratt, USC, Glycosyltransferases and substrates

List of CRADAs:

2015	Shire plc, FGF23 treatment of *Galnt3*-deficient mice